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# An Investigation of the Relationship between Environmental Print, Similar Words Not Derived from Environmental Print, and Reading Achievement of First Grade Students

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AN INVESTIGATION OF THE RELATIONSHIP  
BETWEEN ENVIRONMENTAL PRINT,  
SIMILAR WORDS NOT DERIVED  
FROM ENVIRONMENTAL PRINT, AND  
READING ACHIEVEMENT OF  
FIRST GRADE STUDENTS

THESIS

Submitted to the Graduate Committee of the  
Department of Education and Human Development  
State University of New York  
College at Brockport  
in Partial Fulfillment of the  
Requirements for the Degree of  
Master of Science in Education

by

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### Abstract

The purpose of this study was to investigate if first graders would be more successful at decoding words derived from environmental print as compared to graphically similar words not derived from environmental print. First graders with high reading achievement and first graders with low reading achievement were also examined to see if they were more successful at decoding words derived from environmental print as compared to graphically similar words not derived from environmental print.

The subjects consisted of 79 first graders from a single rural elementary school who had had eight months of formal reading instruction. The subjects were asked to read 36 isolated words and phrases. Eighteen words and phrases were derived from environmental print and eighteen words and phrases were from graphically similar words but not derived from environmental print. The environmental print consisted of labels selected from an array of toy and food products that were familiar to the subjects and local store and street signs that were also familiar to the subjects. Correct responses for each category were recorded.

The results indicated that first graders were more successful at decoding the graphically similar words not

derived from environmental print. This result was also true for the low achievers. The results for the high achievers indicated that they were able to successfully decode environmental print and graphically similar words.

## Table of Contents

	Page
List of Tables.....	v
 Chapter	
I. Statement of the Problem.....	1
Purpose.....	2
Questions to be Answered.....	3
Need for the Study.....	4
Definition of Terms.....	5
Limitations of the Study.....	6
Summary.....	6
II. Review of the Literature.....	8
Purpose.....	8
Early Reading Before Formal Instruction.....	8
Print Awareness.....	12
Early Reading After Formal Instruction.....	22
Reading-Writing Relationship.....	26
Summary.....	27
III. Design of the Study.....	29
Purpose.....	29
Methodology.....	29
Summary.....	32
IV. Findings and Interpretation of Data.....	33
Purpose.....	33
Null Hypotheses.....	33
Analysis of Data.....	34
Summary.....	37
V. Conclusions and Implications.....	39
Purpose.....	39
Conclusions.....	39
Implications for Research.....	41
Implications for Classroom Practice....	43

## Table of Contents (Continued)

	Page
References.....	45
Appendices	
A. Copy of Word Lists.....	49
B. A Comparison of Environmental Print to Graphically Similar Words.....	50

## List of Tables

Table	Page
1. Analysis of First Graders' Knowledge of Environmental Print and Graphically Similar Words.....	35
2. Analysis of High Achieving First Graders' Knowledge of Environmental Print and Graphically Similar Wrods.....	36
3. Analysis of Low Achieving First Graders' Knowledge of Environmental Print and Graphically Similar Words.....	37



## Chapter I

### Statement of the Problem

The development of literacy has been a topic of interest for educators, researchers, and parents for many years. As more and more pressure is exerted on schools from the state legislatures to strive for and to maintain excellence, the development of literacy continues to be a strong focus of interest.

Previous research has described and outlined the background of early readers and variables which may significantly relate to those children who learn to read before formal instruction (Robeck & Wiseman, 1980). Recent research has attempted to explore the nature of young children's interest and knowledge of print.

Studies have indicated that children are aware of print in the environment (Clark, 1978; Durkin, 1966; Goodman & Altwerger, 1981; Haussler, 1982; Ylisto, 1977). Goodman and Altwerger (1981) report that children respond to print by reading labels on television and household products, market signs, street signs, and names of family members. Ylisto (1967) as cited by Robeck and Wiseman (1980) suggested that children's initial responses to print originate from their natural

environment. Robeck and Wiseman (1980) indicated that young children not exposed to formal instruction are learning important concepts related to reading and writing from incidental events in their environment. A study of early readers by Clark (1976) found that the print in the readers environment played an important role as well as books from which they had enjoyed stories.

Haussler (1982) suggests that some children who interact with environmental print do not realize it is reading. Goodman and Altwerger (1981) indicated that the preschool children they studied knew that the print and not the supporting contextual features communicated the message.

Wepner (1985) suggested that enthusiasm and self-confidence with reading could be cultivated further by using a motivating strategy such as familiar logotypes to each beginning reading.

#### Purpose

The primary purpose of this study was to investigate if first graders would be more successful at decoding words derived from environmental print as compared to graphically similar words not derived from environmental print.

A secondary purpose was to examine the relationship

between first grade children with high reading achievement and the decoding of words derived from environmental print as compared to graphically similar words not derived from environmental print.

The ability of first grade children with low reading achievement to decode words derived from environmental print as compared to graphically similar words not derived from environmental print was also examined.

#### Questions to Be Answered

The following questions were considered in this study:

1. Will first graders be more successful at decoding words derived from environmental print as compared to graphically similar words not derived from environmental print?
2. Will first graders with high reading achievement be more successful at decoding words derived from environmental print as compared to graphically similar words not derived from environmental print?
3. Will first graders with low reading achievement be more successful at decoding words derived from environmental print as compared to graphically similar words not derived from environmental print?

### Need for the Study

Research has indicated that many young children read or have books read to them. They are aware of and respond to environmental print. Product labels, television commercials, shopping lists, letters from grandparents become meaningful print. Smith (1976) states that

Children begin to read from the moment they become aware of print in any meaningful way, and ...roots of reading are discernible whenever children strive to make sense of print (p. 299).

Research has been conducted on three, four, and five year old children's response to environmental print in a contextual setting (Hiebert, 1978; Ylisto, 1977).

Limited research has been conducted that explores a five and six year old child's response to environmental print in traditional orthography, with no familiar contextual cues (Goodman & Altwerger, 1981; Haussler, 1982).

In a study that examined the beginning development of reading of eight kindergarten and first grade children, Haussler (1982) reported that when decontextualized environmental print was presented, all the subjects revealed some knowledge of the function of print and the reading process.

Goodman and Altwerger (1981) explored preschoolers' awareness and response to environmental print. The preschoolers acknowledged that the print and not the

supporting contextual features communicated the message. The subjects demonstrated little knowledge of the function of print in books.

Research needed to be conducted that would determine first grade children's knowledge of environmental print in traditional orthography, with no contextual clues, after formal reading instruction has begun.

### Definition of Terms

The following definitions were operational throughout this study:

Print awareness is young children's understanding of the functions of print, knowledge about books, and awareness of own responses to print.

Environmental print are signs or abstract representations which carry conventional or collected meaning. Labels, advertisements, traffic signs, billboards, television and other message carriers are examples of environmental print.

Early readers are those children who have not received school instruction in reading, who are able to recognize a minimum of approximately 20 words on a word list and who read some books independently (Teale, 1978, p. 924).

First graders with high reading achievement are first grade pupils, instructed in reading for eight months,

who consistently scored above criterion on Houghton Mifflin Reading Tests of Basic Reading Skills and performed successfully on reading tasks in the classroom. It should be noted that these subjects were teacher selected.

First graders with low reading achievement are first grade pupils, instructed in reading for eight months, who consistently scored below criterion on Houghton Mifflin Reading Tests of Basic Reading Skills and performed unsuccessfully on reading tests in the classroom. It should be noted that these subjects were teacher selected.

#### Limitations of the Study

This study was limited to 79 first grade children in a single rural elementary school.

#### Summary

Research has indicated that preschool children are aware of and respond to environmental print in contextual settings. Research has also indicated that preschoolers are aware that the print and not the supporting contextual features communicated the message. There has been limited research on the development and interaction of environmental print on children after formal reading instruction begins.

Further research needed to be conducted that would help to determine first grade children's knowledge of environmental print in traditional orthography with no contextual clues after formal reading instruction has begun.

## Chapter II

### Review of the Literature

#### Purpose

The primary purpose of this study was to investigate if first graders would be more successful at decoding words derived from environmental print as compared to similar words not derived from environmental print. A secondary purpose was to examine the relationship between first grade children with high reading achievement and the decoding of words derived from environmental print and first grade children with low reading achievement and the decoding of words derived from environmental print.

This chapter will review the literature related to this study in the following categories: early reading before formal instruction, development of print awareness, early reading after formal instruction, and the reading-writing relationship.

#### Early Reading Before Formal Instruction

Emphasis on understanding the reading process, both what the successful reader can do and what the learner is trying to do, has been of interest to educators (Clark, 1978; Clay, 1977; Smith, 1971). Since most children are exposed to a wide range of printed material and are



expected to make sense of the written language even before formal instruction, the extent to which literacy develops prior to school instruction is another area of interest in the search for understanding the reading process (Goodman & Altwerger, 1981; Haussler, 1982; McKenzie, 1977).

Traditional early reading research focused on the acquisition of print by children who learn to read before school, either with or without parental instruction (Clark, 1978; Durkin, 1966; Reger, 1966; Torrey, 1969). Past positions of researchers in the United States theorized that children should reach a certain biological or maturational level before reading and writing instruction could be fostered (Heffernan, 1960; Huey, 1908; Morphett & Washburne, 1931). This doctrine of postponement (Durkin, 1978) was accepted readily until the 1960's.

Case studies of preschool children negated these early suppositions. Research indicated that some children do learn to read and write before formal instruction (Bissex, 1980; Clark, 1978; Durkin, 1966; Torrey, 1969). Durkin (1966), a pioneer in research on preschool reading, investigated home backgrounds of 49 children who were reading before school and concluded that the children's

home environment had some common characteristics. She indicated that early readers showed an interest in books, scribbled and wrote early, asked questions about print to which an interested adult responded, and were repeatedly exposed to print in their environment including television.

Clark (1978) studied 32 children who read before school. The study supported much of what Durkin found. Clark noted the common characteristic of an interested adult who responded to children's questions about print.

In a case study of a five year old, who could read and write before starting school, Torrey (1969) found that her subject took the initiative in learning to read, enjoyed writing, and television commercials and product labels provided early interest. A major difference from other early readers was the absence of help from an adult. It should be noted that the early readers in these three studies were able to direct their own learning by asking appropriate questions about print.

Teale (1978), examining the literature on early reading, identified four environmental factors repeatedly associated with early readers.

1. It was noted that there was an availability and range of printed materials in the environment.

2. Reading was practiced in the environment so that the function of print was realized.

3. There was an availability of paper and pencil for opportunities to write.

4. The reader received feedback and interacted with a significant person in regard to written language.

Teale determined that

The more conducive to learning to read we can make the environment, the more responsible it is to children, the better it will be in the long run for enabling children to read and for fostering within children the desire to read (p. 931).

Briggs and Elkind (1973; 1977) investigated early readers (pre-kindergarten) with matched controls. In the 1973 study, subjects were given a battery of tests and parents were interviewed. A major finding of the study was that early readers were superior to non-early readers on concrete operational tasks. The 1977 study attempted to replicate the earlier investigation and to get a more detailed picture of early readers and their families. Some of the original tests were eliminated and the informal parent interview was replaced by a formal questionnaire. The results determined that early reading is associated with a complex of child related skills and abilities and parent related attitudes, values, and practices (p. 1234-1235). Two of the most salient characteristics

of early readers were operativity on the part of the children and a high level of academic achievement orientation on the part of the parents. Briggs and Elkind concluded that parents' rather than childrens' interest may be the main motivational determinant of early reading.

In contrast, Reger (1966) reported a case study of a child reading newspapers at age three. The study indicated that the child's reading achievements were not a product of eager parental concern and pressure. The parents did not appear to be aware of the boy's initial accomplishments. Reger concluded that the child must have had reinforcement but that the parents did not associate it with reading behavior.

Home, school environments, and behaviors of kindergarten children identified as having a high or low interest in literature were investigated by Morrow (1983). The findings from the study suggested that the home exerts a strong influence upon young children's interest in literature. It also noted similarities between home behaviors and environments of older voluntary readers, early readers, and young children who were interested in literature.

#### Print Awareness

Recently early reading researchers have been focusing

on young children's natural development and interaction with print in the environment and in texts (Chomsky, 1971; Haussler, 1982; Robeck & Wiseman, 1980).

A study by Reid (1966) cited the claim that young children did not possess basic ideas about print. Reid questioned twelve entering schoolchildren about various aspects of reading. Only one child described "words" as being the critical information in books. Many of the subjects focused on pictures. Some children were uncertain as to what their parents did when they read. Reid concluded that young children perceive reading to be a mysterious activity and have only the vaguest understanding of what reading consists of and its purposes.

Downing (1971-72) attempted to replicate Reid's original interview method and added concrete examples of literacy behavior which would permit non-verbal as well as verbal responses by the subjects. Downing's purpose was to gain understanding of a child's view of language and its written and spoken forms. He surmised that a lack of conscious awareness of language units was a major barrier to reading acquisition in school. Downing explained differences of responses to varying levels in the development of cognitive clarity.

Others writers have suggested that everyday, natural

settings in which young children encounter print provide many clues about written language (Clay, 1977; Goodman & Goodman, 1979; Smith, 1976). The learning which results from these experiences are described as an inter-related holistic process. Smith (1976) states that "children probably begin to read from the moment they become aware of print in any meaningful way" (p. 299).

Clay (1977) has studied five-year-old entrants to New Zealand's schools. She suggests that children are print aware when they ask "What's that say?" in response to a television advertisement or when telling a story from a picture storybook they might sigh and say, "I can't read all the words but I know what they say" (p. 28).

Exposure to many verbal symbols in the environment may help prepare youngsters for learning to read (King & Friesen, 1972). A study by Goodall (1984) supported a hypothesis that four year olds are developing proficiency in interpreting words around them. But Goodall concluded that strategies children use in relying on environment suggest that they may not have extracted skills from their encounters with print which will help them in their school reading classes.

Ylisto (1967) as cited by Robeck and Wiseman (1980) suggested that children's initial responses to print

originate from their natural environment. She suggested that the reading process consisted of sequential steps, beginning with the first awareness of print in the environment to identification of words in a social context (i.e., the identification of "McDonalds" when connected with the golden arches, to identification of words in a total written language context). Ylisto concluded that young children proceed through the process of learning to read as naturally as they learn to talk and understand language (p. 168).

Another study by Ylisto (1977) investigated children's perceptions of the reading act by acknowledging children's responses to photographs and drawings of a word in its natural setting and out of context. Ylisto hypothesized that preschool children perceive printed words as concrete ideas and that this process begins naturally in an environment which provides stimulation and opportunity to interact with print. She inferred that some young children learn to read before formal instruction by discovering that printed word symbols are substitutes for auditory symbols.

A study to compare preschoolers responses to written stimuli presented in the familiar environmental context (signs and billboards) with responses to these same

stimuli presented in the format of a traditional reading task was described by Hiebert (1978). Developmental changes in preschoolers' knowledge of letter combinations as well as words were secondary purposes of the study. Hiebert's results indicated that young children have acquired important knowledge about written language. The subjects in her study were making a word-to-word correspondence between written and spoken language and the preschoolers knew how to use the environment to make sense of written language. (Several previous investigators such as Downing (1971-72) and Reid (1966) concluded that young children did not have this word-to-word correspondence between written and spoken language and that this correspondence needs to be taught in beginning reading instruction.) Lastly, Hiebert indicated that the preschoolers in her study made more errors in identifying letters than words suggesting that learning letters may not be a prerequisite for learning words. However, the 1978 study does not indicate when this knowledge is initially acquired or the extent of its development over the preschool years.

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Another study by Hiebert (1981) did examine patterns and interrelationships in the development of print awareness over the preschool years. Preschool children, ages three, four, and five years, were tested on three



conventional reading readiness measures (letter naming, visual discrimination, and auditory discrimination) and two concepts of reading measures (knowledge about the processes involved in using print and knowledge about the purposes of print). The preschoolers in this study were quite knowledgeable about the processes and uses of print with five year olds performing significantly better than three year olds on all measures. Furthermore, the preschoolers described the print as "writing" or "words" and in some cases gave the correct message or a meaningful substitution for it. The data of this study also provided insight into the interrelationships of print awareness. Often the various dimensions of print awareness are treated as distinct entities. The data also demonstrated that letter naming is only one of several kinds of concepts and skills about reading which young children are acquiring.

Baghban (1984) traced her daughter's reading and writing development from birth to three. She found Giti could distinguish print by 20 months, read 22 signs by 26 months, attempted letter writing at 31 months. Baghban noted that Giti used reading and oral language as mutually reinforcing processes. Giti demonstrated an understanding that what she had written was meaningful and could be

read. Baghban said, "Each of Giti's communicative processes began with attempts at reproducing linguistic models which later resulted in a basic schema for processing appropriate linguistic input. Giti tested hypotheses by labeling, then associating and categorizing raw data she experienced in her environment" (p. 97). Baghban later added, "Hypotheses continued to be tested in order to refine schemata. The schemata continued to influence her information processing strategies and her oral language interactions" (p. 98).

After observing daughter Cecilia's development as a language user between three and five years of age, Payton (1984) claimed that Cecilia was a hypothesizer, active in her own growth. Payton believed that Cecilia learned language and its uses simultaneously and perceived its functions through understanding the situations in which it is practiced. As Cecilia's language competence grew, Cecilia recognized the potential of print in situational contexts and attempts at writing. Payton noted that Cecilia's search for meaning permeated each event.

Robeck and Wiseman (1980) investigated the metalinguistic knowledge children have acquired from their environment before formal instruction. It was concluded that "even very young children who have not been exposed to formal

training are learning from incidental events in their environment important concepts related to reading and writing" (p. 9). This conclusion is supported by Hiebert (1978) and Ylisto (1977). The children's awareness of the difference between print and pictures, left-to-right sequencing, knowledge that reading and writing were purposeful activities were evidenced in this study.

An exploration of preschoolers' awareness and responses to environmental print, their attitudes and concepts of reading and writing, and their knowledge and familiarity with print in books was completed by Goodman and Altwerger (1981). The use of contextual clues surrounding the print and the children's use of terminology related to literacy were also noted. The findings by Goodman and Altwerger suggested that literacy development begins prior to direct formal instruction and is a developmental process. The subjects demonstrated some awareness of environmental print and acknowledged that the print and not the supporting contextual features communicated the message. Yet the subjects demonstrated little knowledge of the function of print in books. They did indicate a knowledge of the form of print (letters, words). Some negative attitudes about learning to read had already been developed. Several children believed reading to be difficult and that

reading could not be learned without being taught. In contrast, the children were willing to write and had a more developed notion of the function of writing. Specific functions such as shopping lists, letters and notes were mentioned.

Bennett (1971) studied beginning reading of preschool and primary school children. He noted responses to stimulus plates--colored food package photographs and block-letter product names--and found that the children could read the food package photographs and product names as young as two and a half years.

A different approach to print awareness was attempted in a study by Wepner (1985). Instead of assessing pre-schoolers' knowledge of environmental print, Wepner designed her study to link personalized unadorned print with environmental adorned print (logotypes). After pretesting 20 preschoolers on knowledge of book handling and logo identification, a series of logos were introduced for eight weeks. The results indicated that those children given logo reading instruction demonstrated greater print awareness, identified more logos correctly, and gained more enthusiasm and self-confidence when faced with the posttest. Wepner determined that reading could be cultivated further with a motivating strategy. Association

with the real world can be transferred to a familiar and meaningful reading vocabulary and on to other printed material.

*4*  
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The relationship of the development of print awareness in eight kindergarten and first grade children to their development of beginning reading of texts was researched and analyzed by Haussler (1982). *see below p. 188* The data showed that the children are aware of environmental print in context. It also indicated that children first use personal experience and context to gain meaning from print in the environment and in books. Haussler concluded that as literacy develops, children's focus narrows from using pictures, knowledge of plot, and past reading experiences to focus on print.

The development of four year old children's knowledge of letters and printed words was studied by Mason (1980) to determine if preschool children begin reading, and if so, how. Mason hypothesized three general stages in children's acquisition of word recognition strategies. With considerable parental help, children realize that letters are discriminable patterns, that letters provide clues for reading, and that sounds in words are determined by letters. Mason concludes "as the child becomes more attracted to letters and to figuring out what words say, he or she uses better strategies for learning and remembering words" (p. 203).

The self-selected reading words of a group of preschool children were compared to the words in the first reading books of four widely used basal reading series (Hiebert, 1983). Words of both vocabularies were coded on four criteria: syllabic structure, grapheme-phoneme correspondences, syntactic function, and type of referent. Significant differences between the two vocabularies on each of the four dimensions were found. The final analysis involved a comparison of the imagery ratings by 50 adults of 20 common nouns from each vocabulary. Results of this analysis suggested that children's self-selected words are more imagery loaded than words in beginning reading books.

#### Early Reading After Formal Instruction

A majority of research in early reading for kindergarten, first, and second graders has centered on methods of introducing sight vocabulary (Nemko, 1984; Rash, Johnson, & Gleadow, 1984; Singer, Samuels, & Spiroff, 1973-74). Little has been written on the development and interaction of print in the environment after formal instruction begins.

Singer, Samuels, and Spiroff (1973-74) studied the effect of presenting four printed words in four different ways on the acquisition of reading responses of 164 first and second graders. The study attempted to resolve the

conflict between Samuels' focal attention theory and Goodman's findings (1965) that presenting words in a context facilitates children in identifying the words. The focal attention theory contends that picture and context cues deter acquisition of reading responses because they enable the child to identify the word in practice without focusing on its graphic features (p. 555). In the study, (Singer et al.) the printed word was presented alone, in association with a picture, embedded in a sentence or in a combination of sentence plus a picture. The analysis of variance indicated that grade level and treatment effects were significant for trials to criterion and for correct responses on the test. In conclusion, efficiency in learning to associate responses to graphic stimuli is significantly greater when the word is presented in isolation than when presented in sentence context or in association with a picture, or both. The results were interpreted as supporting Samuels' focal attention hypothesis.

Nemko (1984) designed a study to test the effectiveness of two methods of early reading instruction, introduction of words in isolation and introduction of words in context. The primary hypothesis was that subjects who were trained in context would perform better than subjects who were trained in isolation. To appraise the two approaches, a

word-learning task was developed. First grade subjects were trained and tested in word recognition during two 30 minute sessions, 24 hours apart. The criterion variable for the word learning task was the number of correct word identifications of the target words. Results revealed that subjects who were trained in context did not perform better than subjects who were trained in isolation.

A study, investigating the effect of word acquisition by kindergarten children under two conditions of instruction, an isolated word condition and a word-sentence condition, was completed by Rash, Johnson, and Gleadow (1984). Results indicated that kindergarten children learn words in significantly fewer trials when the target words are presented in a meaningful sentence. When short term retention was tested in a sentence condition, children were significantly superior to the children learning via an isolated word method. When tested in an isolated word condition, in new context, and on word designation tasks, no significant difference was noted between the two groups. The same pattern of results was obtained in tests of long term retention.

Some differences between these two studies should be noted. Nemko (1984) used a teach-test method of introducing targeted words and measured immediate learning. Rash,



Johnson, and Gleadow (1984) attempted to eliminate the teach-test bias and measured retention after three weeks. Nemko (1984) supported teaching words in isolation and Rash, Johnson, and Gleadow (1984) supported teaching words in context. The most effective classroom approach to beginning reading acquisition seems to be a matter for further investigation.

In the Denver, Colorado Public Schools, Brezeinski (1972) studied the effects of early reading. The Denver schools taught beginning reading to selected kindergarten groups. On entrance to first grade, those groups were divided and placed either in a traditional or an adjusted instructional program. Brezeinski found that by fifth grade, early readers who had adjusted instruction scored significantly higher on tests of reading vocabulary, comprehension, rate, and study skills. However, the early readers who were put into traditional programs lost their early advantage and scored similarly to those who began reading in first grade.

Sutton (1969) showed that children who achieved a measure of reading ability in kindergarten had a continuing and increasing reading advantage over classmates through the primary grades. Manning and Manning (1984) revealed traits associated with early readers from low socioeconomic

backgrounds are similar to traits associated with early readers from higher socioeconomic levels.

During an interview with Jeanne Chall by Cox (1983) it was concluded by Chall that the transition into reading for content and reading for information occurs more effectively when parents and teachers lovingly explain things in the world and help the child to verbalize the new knowledge. Chall said, "Our study found that children who turn out to be the better readers are the children whose parents read to them at a very early age and later the children who had the more difficult books read to them." (p. 13).

#### Reading-Writing Relationship

The research in early literacy has extended to the reading-writing relationship in early readers. A common characteristic of early readers was an interest in scribbling and writing (Clark, 1978; Durkin, 1966; Torrey, 1969).

Hildreth (1963) suggested that reading and writing be taught simultaneously in the first grade, providing as much time to writing as to reading "...because of the mutual relationship between the two processes" (p. 15). She recommended "to make writing a functional skill serving the child's real purpose of communication from

the beginning" (p. 19).

Zutell (1978) suggests that reading and writing are alternate forms of written language and reading should not be treated as a separate entity. Wiseman (1979) as cited by Robeck and Wiseman (1980) supports the idea that reading and writing are mutually reinforcing.

Children should write first, read later proposes Chomsky (1971). She indicates that by writing, the children become active participants in teaching themselves to read. Writing acts as a bridge to understanding what print is and what print does. The print becomes more meaningful to the reader.

### Summary

Early reading research focused on the acquisition of print by children who learn to read before school, either with or without parental instruction. Recently, the focus has been on young children's natural development and interaction with print in the environment and in texts. This interaction with print and understanding of the functions of print is defined as print awareness. Although a number of studies have centered on methods of introducing sight vocabulary to beginning readers in kindergarten, first and second grade, there has been limited research on the development and interaction of print in the environment

after formal instruction begins. This study investigated how successful first grade children decoded environmental print as compared to similar words not derived from environmental print.

## Chapter III

### Design of the Study

#### Purpose

The primary purpose of this study was to investigate if first grade children would be more successful at decoding words derived from environmental print as compared to similar words not derived from environmental print.

A secondary purpose was to examine the relationship between first grade children with high reading achievement and the decoding of words derived from environmental print as compared to graphically similar words not derived from environmental print.

The ability of first grade children with low reading achievement to decode words derived from environmental print as compared to graphically similar words not derived from environmental print was also investigated.

#### Methodology

##### Subjects

This study included 79 children comprising five first grade classes at a single rural elementary school in western New York State. None of the 79 children were classified as learning disabled. Each subject was familiar with the examiner. Of the 79 children, 23 were designated

as having high achievement in reading and 18 were designated as having low achievement in reading. The high achieving and low achieving children were selected by their classroom teachers based on eight months reading performance and consistent scores above or below criterion on Houghton Mifflin Reading Tests of Basic Reading Skills.

#### Instruments and Procedures

Two typewritten word lists, consisting of eighteen environmental print words and eighteen graphically similar words and phrases were presented to the 79 subjects. The environmental print words were labels selected from an array of toy and food products that were familiar to the subjects and local store and street signs that were also familiar to the subjects. The environmental print words and graphically similar words were randomly mixed on the word lists. The lists can be seen in Appendix A.

Each subject was asked to read a word or phrase as quickly as possible. A marker obscured all other words or phrases so that the subject would only concentrate on one item at a time. For the purpose of the study, the examiner recorded a correct or incorrect response. A partially correct response was not considered accurate.

It should be noted that since a parental permission slip was required by the school system to obtain permission

for testing, the subjects were aware that they would be participating in a study. It should also be noted that the subjects were familiar with the examiner.

#### Data Analysis

The t test for dependent means was used to indicate if there was a significant difference between the mean performance of first grade students who were able to decode words from environmental print as compared to words from graphically similar print but not derived from environmental print.

The t test for dependent means was used to indicate if there was a significant difference between the mean performance of high achieving first grade students who were able to decode words from environmental print as compared to words from graphically similar print but not derived from environmental print.

The t test for dependent means was used to indicate if there was a significant difference between the mean performance of low achieving first grade students who were able to decode words from environmental print as compared to words from graphically similar print but not derived from environmental print.

### Summary

Two word lists consisting of environmental print words and graphically similar words and phrases were given to 79 first grade students to determine if there was a significant difference between the ability to decode words from environmental print and graphically similar words and phrases not derived from environmental print.

First grade children with high reading achievement were examined to determine if there was a significant difference between the ability to decode words from environmental print and graphically similar words and phrases not derived from environmental print.

First grade children with low reading achievement were also examined to determine if there was a significant difference between the ability to decode words from environmental print and graphically similar words and phrases not derived from environmental print.



## Chapter IV

### Findings and Interpretation of Data

#### Purpose

The primary purpose of this study was to investigate if first grade children would be more successful at decoding words derived from environmental print as compared to graphically similar words not derived from environmental print.

The study also examined first grade children with high reading achievement and the decoding of words derived from environmental print as compared to graphically similar words not derived from environmental print.

A third purpose examined first grade children with low reading achievement and the decoding of words derived from environmental print as compared to graphically similar words not derived from environmental print.

#### Null Hypotheses

The null hypotheses investigated in this study were as follows:

1. There is no statistical significant difference between mean scores of first grade children as measured by the ability to decode words derived from environmental print as compared to graphically similar words not derived from environmental print.

2. There is no statistical significant difference between mean scores of high achieving first grade children as measured by the ability to decode words derived from environmental print as compared to graphically similar words not derived from environmental print.

3. There is no statistical significant difference between mean scores of low achieving first grade children as measured by the ability to decode words derived from environmental print as compared to graphically similar words not derived from environmental print.

#### Analysis of Data

A two-tailed t test for dependent means was used for each null hypothesis to determine how significant environmental print was to first graders as compared to graphically similar words not derived from environmental print.

#### Null Hypothesis 1

The t test indicated that there was a significant difference for first graders between the ability to decode words from environmental print as compared to graphically similar words not derived from environmental print. The first grade students were better able to decode words that were graphically similar to environmental print but not derived from environmental print. (See Table 1.)

Table 1

Analysis of First Graders' Knowledge  
of Environmental Print  
and Graphically Similar Words

n	$\bar{X}_1$	$\bar{X}_2$	$\Sigma D$	$\Sigma D^2$	t
79	6	7.99	-157	969	-6.094

( $\bar{X}_1$  illustrates environmental print;  $\bar{X}_2$  illustrates graphically similar words.)

For 78 d.f. at the .05 confidence level, the  $t$  required is  $\pm 1.99$ . For 78 d.f. at the .01 confidence level, the  $t$  required is  $\pm 2.64$ . Therefore the hypothesis was rejected.

#### Null Hypothesis 2

The  $t$  test indicated that for high achieving first grade students there was no significant difference between the ability to decode words from environmental print as compared to graphically similar words not derived from environmental print. (See Table 2.)

Table 2

Analysis of High Achieving  
First Graders' Knowledge of  
Environmental Print and  
Graphically Similar Words

n	$\bar{X}_1$	$\bar{X}_2$	$\Sigma D$	$\Sigma D^2$	t
23	11.3	11.65	-8	194	-.569

( $\bar{X}_1$  illustrates environmental print;  $\bar{X}_2$  illustrates graphically similar words.)

For 22 d.f. at the .05 confidence level, the  $t$  required is  $\pm 2.07$ . For 22 d.f. at the .01 confidence level, the  $t$  required is  $\pm 2.82$ . Therefore the hypothesis was retained.

### Null Hypothesis 3

The  $t$  test indicated that for low achieving first grade students there was a significant difference between the ability to decode words from environmental print as compared to graphically similar words not derived from environmental print. The low achieving first grade students were better able to decode words that were graphically similar to environmental print but not derived from environmental print. (See Table 3.)

Table 3

Analysis of Low Achieving  
First Graders' Knowledge of  
Environmental Print and  
Graphically Similar Words

n	$\bar{X}_1$	$\bar{X}_2$	$\Sigma D$	$\Sigma D^2$	t
18	2	3.78	-32	130	-3.642

( $\bar{X}_1$  illustrates environmental print;  $\bar{X}_2$  illustrates graphically similar words.)

For 17 d.f. at the .05 confidence level, the  $\underline{t}$  required is  $\pm 2.11$ . For 17 d.f. at the .01 confidence level, the  $\underline{t}$  is required is  $\pm 2.90$ . Therefore the hypothesis was rejected.

#### Summary

The subjects for this study were first graders who had been instructed in formal reading instruction for eight months. The purpose of the study was to investigate if first grade children would be more successful at decoding words derived from environmental print as compared to graphically similar words not derived from environmental print. High achieving first grade children and low achieving

first grade children and their success with environmental print as compared to graphically similar words not derived from environmental print were also investigated in two separate hypotheses.

A t test for dependent means was used to determine if there was a significant difference for null hypotheses one, two and three.

Analysis of the data rejected null hypotheses one and three, indicating there was a significant difference between the ability to decode words from environmental print as compared to graphically similar words not derived from environmental print. The students were better able to decode words that were graphically similar to environmental print but not derived from environmental print. Analysis of the data did not reject the second null hypothesis, indicating there was no significant difference between high achieving first graders' ability to decode words derived from environmental print as compared to graphically similar words not derived from environmental print. The high achieving students could decode both sets of words equally well.

## Chapter V

### Conclusions and Implications

#### Purpose

The primary purpose of this study was to investigate if first grade children would be more successful at decoding words derived from environmental print as compared to graphically similar words not derived from environmental print.

First grade children with high reading achievement and first grade children with low reading achievement were also examined in separate questions in relationship to words derived from environmental print as compared to graphically similar words not derived from environmental print.

#### Conclusions

The results of this study indicated that there was a significant difference for first graders between the ability to decode words from environmental print and the ability to decode graphically similar words not derived from environmental print. The first grade children were more successful at decoding graphically similar words than the words derived from environmental print.

The low achieving first grade students were also more successful at decoding graphically similar words than the words derived from environmental print.

Some observations should be included at this point. The students were reading each word in isolation, vertically, in a word list. There were no contextual clues such as pictures, logotypes, or other words in a sentence to add to the meaning. Self-correction could not be applied. The students exhibited nervousness, restlessness, and often frustration. Even familiarity with the examiner did not create a relaxed attitude for many of the students. All of these variables could have affected the scores.

The subjects still revealed their knowledge that the print communicated the message by naming letters, "sounding out," or substituting one word for another. Eight months of reading instruction could have contributed to this tendency.

An interested conclusion is that the subjects did not transfer their knowledge of environmental print to isolated words in a word list. They perhaps did not consider logotypes or environmental print as "reading" even after having interacted with print in a formal instructional setting.

1A  
1000  
A study by Woodens (1984) also concluded that children can and do react to environmental print as long as print is displayed in context (actual label itself with distinctive color, size, and shape). The reaction



was reduced when the accompanying feature of print characteristics were removed (p. 9). Woodens study used preschool and younger children.

The current study did not indicate a significant difference between the ability to decode words from environmental print and the ability to decode graphically similar words not derived from environmental print for high achieving first graders. The high achievers were able to decode the majority of the words on the word list with a minimum amount of effort. It was observed that they were confident and relaxed. Many of the high achievers indicated to the examiner that a considerable amount of the words were from signs.

In conclusion, the high achieving first graders were able to decode the isolated words regardless if the words were derived from environmental print or graphically similar words. They were more aware of the function and importance of print. It appears that the high achievers perceived all print as reading.

#### Implications for Research

Manning and Manning (1984) studied early readers and nonreaders from low socioeconomic environments and concluded that those children whose parents took them places and explained things to them were ahead in vocabulary,

concepts, and overall reading comprehension. Since low achieving first graders and high achieving first graders of this study had different results, it would be interesting to look into the home environments of these children to see which children had traveled, which children were read to frequently, and which children had parents that readily offered information about print. To assess any improvement it would be interesting to test these same children again in second or third grade with the same word list or an entirely different word list.

Different approaches to this study could be investigated. A study could assess knowledge of environmental print in September before formal reading instruction and then reassess again after eight months of reading instruction. Are first graders aware of environmental print in September? Do first graders have knowledge of environmental print in September and not transfer that knowledge after formal reading instruction? Questioning their thinking process could be an added variable in the study.

Another approach is to have a word list of only environmental print and make the subject aware that the words or phrases are environmental print. An added variable is to ask for the subjects' predictions or what they expect to see on the word list.

Further research could be conducted by comparing two groups of children from classrooms with different instructional approaches to reading. One group of children could be from a whole language classroom and the other from a skills oriented classroom.

Many studies have been conducted that assess pre-schoolers' knowledge of environmental print (Baghban, 1984; Goodall, 1984; Goodman & Altwerger, 1981; Manning & Manning, 1984; Wepner, 1985; Woodens, 1984). Often the studies conclude that children are aware of and recognize environmental print. They come to school with the knowledge that print conveys a message. More research needs to be conducted on what happens to this knowledge of environmental print once formal reading instruction begins.

#### Implications for Classroom Practice

Results of this study indicate that many first graders are not aware that knowledge of environmental print is reading. They have not made the transfer or connection. It is essential for the classroom teacher to build on a child's present knowledge. A child needs to be taught in a variety of learning situations where all print is valued. A whole language classroom would be an ideal setting. An attitude of excitement often permeates the classroom. Print becomes highlighted and

important to the student as the instructor teaches about print in a natural functional context. Knowledge of environmental print could easily be transferred to textual print.

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## Appendices

## Appendix A

### Copy of Word Lists

- |                  |                       |
|------------------|-----------------------|
| 1. Crest         | 19. Jif peanut butter |
| 2. let's go      | 20. garbage truck     |
| 3. cord          | 21. March             |
| 4. Christmas     | 22. chores            |
| 5. Tide          | 23. hears             |
| 6. big men       | 24. Coke              |
| 7. Rochester     | 25. Hugga Bunch       |
| 8. crust         | 26. Wegmans           |
| 9. Cabbage Patch | 27. Campbell's        |
| 10. rock star    | 28. Bergen            |
| 11. Lego         | 29. trains for me     |
| 12. cake         | 30. Cheerios          |
| 13. comb all     | 31. Burger King       |
| 14. Transformers | 32. lift me up better |
| 15. starch       | 33. larger thing      |
| 16. Sears        | 34. hide              |
| 17. merger       | 35. Ford              |
| 18. trust us     | 36. bag a lunch       |

## Appendix B

### A Comparison of Environmental Print to Graphically Similar Words

<u>Environmental Print</u>	<u>Graphically Similar Words</u>
Crest	crust
Christmas	trust me
Tide	hide
Rochester	rock star
Cabbage Patch	garbage truck
Lego	Let's go
Transformers	trains for me
Sears	hears
Jif peanut butter	lift me up better
March	starch
Coke	cake
Hugga Bunch	bag a lunch
Wegmans	big men
Campbell's	comb all
Bergen	merger
Cheerios	chores
Burger King	larger thing
Ford	cord